

DOE Survey Response

Questions

- 1) What are the procedures now used in your region for economic dispatch? Who is performing the dispatch (a utility, an ISO or RTO, or other) and over how large an area (geographic scope, MW load, MW generation resources, number of retail customers within the dispatch area)?
 - With the exception of two small utilities (an investor owned utility and a cooperative) located in the Southwestern part of the state, Virginia is served by the PJM Interconnection L.L.C., an RTO. PJM performs the dispatch function for the predominant area of Virginia based on security constraints, generator bids and self-scheduled transactions. PJM serves all or parts of 13 states and the District of Columbia. The one investor owned utility that is not served by PJM is served by another RTO, the Midwest Independent System Operator, Inc. MISO serves all or part of 14 states and part of Canada. MISO performs the dispatch function for this area based on security constraints, generator bids and self-scheduled transactions. The remaining cooperative receives service from TVA. The number of residential customers served by these respective entities is not known.
- 2) Is the Act's definition of economic dispatch (see above) appropriate? Over what geographic scale or area should economic dispatch be practiced? Besides cost and reliability, are there any other factors or considerations that should be considered in economic dispatch, and why?
 - The Act's definition of economic dispatch as "the operation of generation facilities to produce energy at the lowest cost to reliably serve customers, recognizing any operational limits of generation and transmission facilities" is ambiguous in that it specifies lowest cost without identifying who is to receive the lowest cost. In a bid based LMP system like that used by PJM, a security constrained dispatch based on generating costs may be different from one that is bid based. Additionally, costs seen by loads represent marginal costs rather than actual generating costs. As such, the ramifications for generators can be substantially different than those for consumers. These differences can be greatly exaggerated by transmission constraints and or market power abuses. The LMP model re-prices generation paid for by consumers at a cost equal to the bid of marginal generation (i.e., the bid of the last winning bidder). Since marginal units are often fueled by high cost natural gas or oil, prices seen by consumers often substantially exceed the actual generating costs of coal or nuclear units. Further, there is little effective assurance that the last winning bid is related to the actual generating cost for the bid-winning unit. Depending on the market structure and the effectiveness of market monitoring and mitigation policies, a bid based dispatch may give rise to great incentives for monopoly, or market power, abuses.

Ideally, economic dispatch should be done over the largest area that can be reliably accommodated by the transmission system. Unfortunately, the electrical grid is in a

constant state of flux with constantly varying loads, generation availability, transmission system configurations, and line outages. As such, it is impossible to select a single set of geographic boundaries that would always be appropriate for “economic dispatch.”

Cost and reliability should be appropriate considerations for dispatch under most conditions. During emergency conditions, additional considerations may include national security interests and human needs requirements.

- 3) How do economic dispatch procedures differ for different classes of generation, including utility-owned versus non-utility generation? Do actual operational practices differ from the formal procedures required under tariff or federal or state rules, or from the economic dispatch definition above? If there is a difference, please indicate what the difference is, how often this occurs, and its impacts upon non-utility generation and upon retail electricity users. If you have specific analyses or studies that document your position, please provide them.
- Assuming that utility-owned and non-utility owned generators have equal access to transmission facilities and that markets are sufficiently competitive, “security constrained” economic dispatch should be the same for everyone. Under such a system, departures from “economic dispatch” should only occur as a result of reliability considerations, the self scheduling of certain transactions and instances when generators base their bids on something other than actual generating costs. The complexity of the electrical grid coupled with potential for market abuses may give rise to inequitable dispatch even under an open access RTO based environment.

Advocates of mandatory RTO participation argue that independent operation is necessary to curb abuses by incumbent utilities. These advocates allege that incumbent utilities withhold transmission access in order to favor their own generation. There may be merit to these accusations in some circumstances; however, it is not clear whether these instances are the norm. The proponents of increased RTO development often fail to acknowledge that transmission systems were largely designed to move power from the incumbent’s generating units to the incumbent’s loads and not to accommodate open access. Consequently, at least some of the allegations of incumbent abuse may simply reflect instances where transmission systems were being used as originally intended. Increased open access may involve greater instances of “out-of-merit” dispatch from an incumbent utility perspective.

We have no specific analyses or studies to document inequitable restrictions on economic dispatch. Suffice it to say that the complexity of the grid makes it extremely difficult to assure equitable dispatch regardless of the market structure.

- 4) What changes in economic dispatch procedures would lead to more non-utility generator dispatch? If you think that changes are needed to current economic dispatch

procedures in your area to better enable economic dispatch participation by nonutility generators, please explain the changes you recommend.

- We have not identified any needed changes. Nor have we concluded that the premise (i.e., increased dispatch of non-utility generation) is desirable.
- 5) If economic dispatch causes greater dispatch and use of non-utility generation, what effects might this have – on the grid, on the mix of energy and capacity available to retail customers, to energy prices and costs, to environmental emissions, or other impacts? How would this affect retail customers in particular states or nationwide? If you have specific analyses to support your position, please provide them to us.
- Absent very detailed and expensive modeling which we have not conducted, these questions cannot be answered with any degree of certainty. Absent such modeling, and speaking generally, increased transmission access can increase marginal costs in certain areas (areas with lower cost generation) and decrease marginal cost in other areas. If these areas include competitive retail markets (deregulated markets), increased costs will shift costs between regions. Given increased costs associated with developing and operating RTO based markets, it is far from clear that increased transmission access produces a net gain.
- 6) Could there be any implications for grid reliability – positive or negative – from greater use of economic dispatch? If so, how should economic dispatch be modified or enhanced to protect reliability?
- Greater use of economic dispatch generally requires RTO expansion. Such expansion may have both positive and negative implications for grid reliability. On the positive side greater regional management and standard market design may improve regional coordination and planning which should make the grid more reliable. On the other hand, increased transmission flows associated with greater wholesale competition may over-stress the transmission system, which was not originally designed with open access in mind. Additionally, communication issues and limited or unclear RTO authority could adversely impact reliability.